

SITEWORK SPECIFICATIONS

SITEWORK PER ENGINEERING CONSULTANT DESIGN

Table with 2 columns: SECTION and DEMOLITION. Rows include SECTION 02050, 02100, 02200, 02227, 02245, 02270, 02281, 02282, 02284, 02285, 02286, 02287, 02290, 02310, 02311, 02312, 02313, 02314, 02315, 02316, 02317, 02318, 02319, 02320, 02321, 02322, 02323, 02324, 02325, 02326, 02327, 02328, 02329, 02330, 02331, 02332, 02333, 02334, 02335, 02336, 02337, 02338, 02339, 02340, 02341, 02342, 02343, 02344, 02345, 02346, 02347, 02348, 02349, 02350.

REFERENCE DOCUMENTS

- 1. GEOTECHNICAL INVESTIGATION AND DESIGN SPECIFICATIONS PREPARED SPECIFICALLY FOR THIS PROJECT.
2. STATE DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS AND DRAWINGS, LATEST EDITION.
3. FEDERAL AID TO INTERSTATE AND DEFENSE HIGHWAY CONSTRUCTION, LATEST EDITION.
4. ALL STANDARDS CITED HEREIN SHALL REFER TO THE LATEST REVISION OF THAT STANDARD UNDER THE SAME SPECIFICATION NUMBER, OR THE SUPERSEDING SPECIFICATION UNDER A NEW NUMBER.

SECTION 02050 DEMOLITION

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Demolition of designated site structures, retaining walls, and foundations and removal of materials from site.
B. Demolition and removal of pavements, curbs and gutters, drainage structures, utilities, signage, or landscaping.
C. Disconnecting and capping or removal of identified utilities.
D. Filling or removal of existing tanks, pipes, and appurtenances.
E. Filling voids in subsurface created as a result of removals or demolition.
F. Hauling material commensurate with disposal requirements.

1.02 RELATED SECTIONS

- A. Section 02100 - Site Preparation
B. Section 02200 - Earthwork
C. Section 02227 - Aggregate Materials
D. Section 02270 - Slope Protection and Erosion Control
E. Storm Water Pollution Prevention Plan
F. Construction Drawings
G. Geotechnical Investigation.

1.03 REGULATORY REQUIREMENTS

- A. Conform to applicable local code for demolition of structures, safety of adjacent structures, dust control, and runoff control.
B. Obtain required permits and licenses from appropriate authorities. Pay associated fees including disposal charges.
C. Notify affected utility companies before utility work is commenced.
D. Do not close or obstruct roadways, sidewalks, or fire hydrants without appropriate permits.
E. Conform to applicable regulatory procedures when hazardous or contaminated materials are discovered.
F. Test soils around buried tanks for contamination.

1.04 PROJECT RECORD DOCUMENTS

Accurately record actual locations of capped utilities and subsurface obstructions that will remain after demolition.

1.05 PRODUCT CONDITIONS

- A. Structures to be demolished will be discontinued in use and vacated prior to start of work.
B. Owner assumes no responsibility for condition of structures to be demolished.
C. Conditions existing at time of inspection for bidding purposes will be maintained by Owner in so far as practicable.
D. Variations within structures may occur by Owner's removal of unsavvy operations prior to start of demolition work.
E. Unless otherwise indicated in Contract Documents or specified by Owner items of salvagable value to Contractor shall be removed from site and structures. Storage or sale of removed items on site will not be permitted and shall not be subject to either warranty or satisfaction of any lien.
F. Explosives shall not be brought to site or used without written consent of authorities having jurisdiction. Such written consent will not relieve Contractor of total responsibility for injury to persons or for damage to property due to blasting operations. Performance of required blasting shall comply with governing regulations.

PART 2 PRODUCTS

2.01 FILL MATERIALS

Aggregate materials as specified in Section 02227.

PART 3 EXECUTION

3.01 PREPARATION

- A. Provide fence and maintain erosion control devices, temporary barriers, and security devices at locations indicated on Construction Drawings.
B. Protect existing landscaping materials, appurtenances, and structures which are not to be demolished. Repair damage to existing landscaping materials as specified by Owner.
C. Prevent movement or settlement of adjacent structures. Provide bracing and shoring as needed.
D. Mark location of utilities to be removed or relocate utilities that are to remain. Prevent interruption of existing utility service to occupied or used facilities, except when authorized in writing by authorities having jurisdiction. Provide temporary services during interruptions to existing utilities as acceptable to governing authorities or Owner.

3.02 DEMOLITION REQUIREMENTS

- A. Coordinate demolition with adjacent structures or pavements.
B. Cease operations immediately if adjacent structures appear to be in danger. Notify authority having jurisdiction. Do not resume operations until directed.
C. Conduct operations with minimum of interference to public or private uses. Maintain ingress and egress at all times.
D. Obtain written permission from adjacent property owners when demolition equipment will traverse, infringe upon, or limit access to their property.
E. Sprinkle work with water to minimize dust. Provide hoses and water connections for this purpose.
F. Comply with governing regulations pertaining to environmental protection.
G. Clean adjacent structures and improve drainage, ditches, and debris caused by demolition operations. Return adjacent areas to condition existing prior to start of work.

3.03 DEMOLITION

- A. Demolish buildings completely and remove from site using methods as required to complete work within limitations of governing regulations. Small structures may be removed intact when acceptable to Owner and authorities having jurisdiction.
B. Proceed with demolition in systematic manner, from top of structure to ground. Complete demolition work above each floor or tier before disturbing supporting members on lower levels.
C. Locate demolition equipment and remove materials to prevent excessive loading to supporting walls, floors, or framing.
D. Remove structural framing members and lower to ground by hoists, derricks, or other suitable methods.
E. Demolish concrete and masonry in small sections. Break up concrete slabs-on-grade that are 2 ft or more below proposed subgrade. Remove slab-on-grade and below grade construction within 2 ft of proposed subgrade.

3.04 FILLING BASEMENTS AND VOIDS

- A. Completely fill below grade areas and voids resulting from demolition or removal of structures, underground fuel storage tanks, and other structures, using approved concrete or aggregate materials, and seal free from debris, trash, frozen materials, roots, and other organic matter.
B. Ensure that areas to be filled are free of standing water, frost, frozen or unsuitable material, trash, and debris prior to fill placement.
C. Place fill materials in accordance with Section 02200 unless subsequent excavation for new work is required.
D. Gravel surface to match adjacent grade and below grade construction with same material and construction.

3.05 DISPOSAL OF DEMOLISHED MATERIALS

- A. Remove from site debris, rubbish, and other materials resulting from demolition operations.
B. No burning of any materials, debris, or trash shall be permitted on site.
C. All materials to be disposed of shall be disposed of in accordance with applicable laws, regulations, and ordinances.
D. Transport materials removed from demolished structures with appropriate vehicles and dispose off-site to areas which are approved for disposal by governing authorities and appropriate providers.

END OF SECTION 02050

SECTION 02100 SITE PREPARATION

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Clear, grub, and remove stumps, grass, trees, and other plant life in preparation for site or building earthwork.
B. Protection of existing structures, trees, or vegetation indicated in Contract Documents to remain.
C. Remove topsoil from areas that are to be incorporated into limits of project and where so indicated on Construction Drawings.

1.02 RELATED SECTIONS

- A. Section 02050 - Demolition
B. Section 02200 - Earthwork
C. Section 02270 - Slope Protection and Erosion Control
D. Storm Water Pollution Prevention Plan
E. Construction Drawings
F. Geotechnical Investigation.

1.03 ENVIRONMENTAL REQUIREMENTS

- A. Construct temporary erosion control systems as shown on Construction Drawings or as directed by Storm Water Pollution Prevention Plan (SWPPP) to protect adjacent properties and water resources from erosion and sedimentation.
B. In event that siltwork on this project will disturb 5 or more acres, Contractor shall not begin construction without National Pollution Discharge Elimination System (NPDES) permit governing discharge of storm water from site for entire construction period. NPDES permit requires SWPPP to be in place during construction.
C. Contractor shall be totally responsible for conducting storm water management practices in accordance with NPDES permit and for enforcing all applicable Federal, State, and local laws, regulations, and ordinances.
D. Construction delays, and remedial actions resulting from Contractor's failure to comply with provisions of NPDES permit.

1.04 PRODUCT CONDITIONS

- A. Conditions existing at time of inspection for bidding purposes will be maintained by Owner in so far as practicable.
B. Variations in conditions or discrepancy in actual conditions as they apply to site preparation operations are to be the responsibility of Owner prior to commencement of activities.

PART 2 PRODUCTS

2.01 EQUIPMENT

Off-site materials shall be transported to project using well maintained and operating vehicles. Once on site, transporting vehicles shall stop on designated haul roads and shall at no time endanger improvements by rutting, overloading, or pumping.

PART 3 EXECUTION

3.01 PREPARATION

- A. Verify existing plant life that is to remain and clearing limits are clearly tagged, identified, and marked in such manner as to leave their existing through construction operations.
B. Tests and analysis of aggregate materials will be performed in accordance with ASTM and AASHTO procedures specified herein.
C. Conduct operations with minimum interference to public or private uses and facilities. Maintain ingress and egress at all times and clean or sweep roadways daily as required by SWPPP or governing authority. Dust control shall be provided by watering systems or equipment.
D. Protect benchmarks, property corners, and other survey monuments from damage or displacement. If marker needs to be removed it shall be referenced by licensed land surveyor and replaced, as necessary, by some.
E. Provide traffic control as required, in accordance with the U.S. Department of Transportation's Manual on Uniform Traffic Control Devices and applicable state highway department requirements.

3.02 CLEARING

- A. Clear areas and provide access to site and execution of work.
B. Unless otherwise indicated on Construction Drawings, remove trees, shrubs, grass, other vegetation, improvements, or obstructions from site. Clearing shall include stumps and roots. Depressions caused by clearing and grubbing operations are to be filled to subgrade elevation to avoid ponding water. Satisfactory proof shall be furnished in accordance with Section 02200.
C. Remove grass, trees, plant life, stumps, and other construction debris from site to dump site that is suitable for handling such material according to state laws and regulations.

3.04 TOPSOIL EXCAVATION

- A. Topsoil shall consist of organic surface soil found in depth of not less than 8-inches. Satisfactory topsoil is reasonably free of subsoil, clay lumps, stones, and other objects over 2-in. diameter, weeds, roots, and other objectionable material.
B. Cut away grass.
C. Site topsoil from areas that are to be filled, excavated, landscaped, or re-graded to such depth that it retains permeability with underlying strata or questionable material.

2. Ditch/soil topsoil in storage piles in areas shown on Construction Drawings or where directed by Owner. Construct storage piles to freely drain surface water. Cover storage piles as required to prevent windblown dust. Dispose of unsuitable topsoil as specified for waste material, unless otherwise specified by Owner. Excess topsoil shall be removed from site by Contractor unless specifically noted otherwise on Construction Drawings.

END OF SECTION 02100

SECTION 02200 EARTHWORK

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Excavation, treatment, and backfilling of subgrade for lime stabilization.
B. Excavation, treatment, and backfilling of subgrade for cement stabilization.
C. Excavation, treatment, and backfilling of subgrade for fly ash stabilization.
D. Installation of Geotextile Fabric for stabilization of subgrade.
E. Scouring, compacting, drying, and removal of unsuitable material to ensure proper preparation of areas for fills or proposed improvements.

1.02 RELATED SECTIONS

- A. Section 02050 - Demolition
B. Section 02100 - Site Preparation
C. Section 02227 - Aggregate Materials
D. Section 02245 - Soil Stabilization
E. Section 02270 - Slope Protection and Erosion Control
F. Section 02300 - Landscaping
G. Storm Water Pollution Prevention Plan
H. Architectural Plans and Specifications as they relate specifically to earthwork beneath buildings, where architectural requirements are more stringent than civil requirements
I. Construction Drawings

1.03 REFERENCE STANDARDS

- A. American Society for Testing and Materials (ASTM) latest edition
D 698 Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lb/ff/3 (600 kN/m/m³))
D 998 Density and Unit Weight of Soil in Place by the Sand-Cone Method
D 1557 Laboratory Compaction Characteristics of Soil Using Modified Effort (68,000 ft-lb/ff/3 (2,700 kN/m/m³))
D 1587 Density and Unit Weight of Soil in Place by the Rubber Balloon Method
D 2216 Laboratory Determination of Water (Moisture) Content of Soil, Rock, and Soil-Aggregate Mixtures
D 2487 Classification of Soils for Engineering Purposes
D 2922 Density of Soil on Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)
D 3017 Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth)
D 3018 Liquid Limit, Plasticity Index, and Plasticity Index of Soils
D 4218 Laboratory Determination of Water (Moisture) Content of Soil, Rock, and Soil-Aggregate Mixtures
D 4247 Classification of Soils for Engineering Purposes
D 4922 Density of Soil on Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)
D 5007 Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth)
D 5101 Liquid Limit, Plasticity Index, and Plasticity Index of Soils
D 5102 Nuclear Method - Asphaltic Concrete Paving
D 5103 Nuclear Method - Portland Cement Concrete Paving
D 5104 Nuclear Method - Portland Cement Concrete Paving
D 5105 Nuclear Method - Portland Cement Concrete Paving
D 5106 Nuclear Method - Portland Cement Concrete Paving
D 5107 Nuclear Method - Portland Cement Concrete Paving
D 5108 Nuclear Method - Portland Cement Concrete Paving
D 5109 Nuclear Method - Portland Cement Concrete Paving
D 5110 Nuclear Method - Portland Cement Concrete Paving
D 5111 Nuclear Method - Portland Cement Concrete Paving
D 5112 Nuclear Method - Portland Cement Concrete Paving
D 5113 Nuclear Method - Portland Cement Concrete Paving
D 5114 Nuclear Method - Portland Cement Concrete Paving
D 5115 Nuclear Method - Portland Cement Concrete Paving
D 5116 Nuclear Method - Portland Cement Concrete Paving
D 5117 Nuclear Method - Portland Cement Concrete Paving
D 5118 Nuclear Method - Portland Cement Concrete Paving
D 5119 Nuclear Method - Portland Cement Concrete Paving
D 5120 Nuclear Method - Portland Cement Concrete Paving

1.04 QUALITY ASSURANCE

- A. An independent testing laboratory, selected and paid by Owner, shall be retained to perform construction testing on site based on recommendations in the Geotechnical Investigation Report.
B. If inspection requirements are not completed at any time during construction process, remove and recompact impacted areas until proper compaction is obtained on an additional expense to Owner.
C. In areas to receive pavement, California Bearing Ratio (CBR) test shall be performed for each type of material that is imported from off-site.
D. Following tests shall be performed as part of construction testing requirements on each type of on-site or imported soil material used as compacted fill.
1. Moisture and Density Relationship: ASTM D 698 (or ASTM D 1557)
2. Mechanical Analysis: AASHTO T 88
3. Plasticity Index: ASTM D 4318
E. Field density tests for in-place materials shall be performed as part of construction testing requirements according to one of following standards:
1. Sand-Cone Method: ASTM D 1556
2. Ballon Method: ASTM D 2167
3. Nuclear Method: ASTM D 2922 (Method B-Direct Transmission)
F. The independent testing laboratory shall prepare test reports that indicate test location, elevation data, and test results.
G. Owner, CEC, Resident, and Plasticity Index of Soils.
H. The independent testing laboratory shall prepare test reports that indicate test location, elevation data, and test results.
I. In event that test performed fails to meet Specifications, Owner and Contractor shall be notified immediately by the independent testing laboratory.
J. Costs related to retesting due to failures shall be paid for by Contractor on an additional expense to Owner. Owner reserves right to employ an independent testing laboratory and to direct testing that is deemed necessary. Contractor shall provide free access to site for testing activities.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Excavated and re-used material for subsoil fill as specified herein.
B. Imported fill as specified in Section 02227.
C. Imported fill material approved by Owner and specified in the Geotechnical Investigation Report.
D. Imported fill material approved by Owner and specified in the Geotechnical Investigation Report.
E. Filter and drainage fabric as specified.

2.02 EQUIPMENT

Off-site materials shall be transported to project using well maintained and operating vehicles. Once on site, transporting vehicles shall stop on designated haul roads and shall at no time endanger improvements by rutting, overloading, or pumping.

PART 3 EXECUTION

3.01 PREPARATION

- A. Excavate subsoil to depth sufficient to accommodate soil stabilization.
B. Remove lumped subsoil, boulders, and rock that interfere with achieving uniform subsoil conditions.
C. Soil Treatment and Backfilling
1. Lime Stabilized Subgrade: Where indicated on Construction Drawings, treat prepared subgrade with 5 percent hydrated lime by weight in accordance with state highway department specifications. Compact to not less than 95 percent of maximum dry density as determined by ASTM D 698.
2. Cement Stabilized Subgrade: Where indicated on Construction Drawings, treat prepared subgrade with portland cement in accordance with state highway department specifications. Compact to not less than 95 percent of optimum density as determined by ASTM D 698.
3. Fly Ash Stabilized Subgrade: Where indicated on Construction Drawings, treat prepared subgrade with fly ash in accordance with state highway department specifications. Compact to not less than 95 percent of optimum density as determined by ASTM D 698.
D. Maintain optimum moisture of mix materials to attain required stabilization and compaction.
E. Finish geotextile fabric in accordance with Section 02200.

3.02 EXCAVATION

- A. Excavate subsoil to depth sufficient to accommodate soil stabilization.
B. Remove lumped subsoil, boulders, and rock that interfere with achieving uniform subsoil conditions.
C. Soil Treatment and Backfilling
1. Lime Stabilized Subgrade: Where indicated on Construction Drawings, treat prepared subgrade with 5 percent hydrated lime by weight in accordance with state highway department specifications. Compact to not less than 95 percent of maximum dry density as determined by ASTM D 698.
2. Cement Stabilized Subgrade: Where indicated on Construction Drawings, treat prepared subgrade with portland cement in accordance with state highway department specifications. Compact to not less than 95 percent of optimum density as determined by ASTM D 698.
3. Fly Ash Stabilized Subgrade: Where indicated on Construction Drawings, treat prepared subgrade with fly ash in accordance with state highway department specifications. Compact to not less than 95 percent of optimum density as determined by ASTM D 698.
D. Maintain optimum moisture of mix materials to attain required stabilization and compaction.
E. Finish geotextile fabric in accordance with Section 02200.

3.03 FILLING AND SUBGRADE PREPARATION

- A. Fill areas to contours and elevations shown on Construction Drawings with uniform materials.
B. Place fill in accordance with the design specification contained within the Geotechnical Investigation Report.
C. Material imported from off-site shall have CBR value equal to or above pavement design subgrade CBR value indicated on Construction Drawings.
D. Ensure that areas to be filled are free of standing water, frost, frozen or unsuitable material, trash, and debris prior to fill placement.
E. Place fill materials in accordance with Section 02200 unless subsequent excavation for new work is required.
F. Gravel surface to match adjacent grade and below grade construction with same material and construction.

3.04 MAINTENANCE OF SUBGRADE

- A. Finished subgrade shall be verified to ensure proper elevation and conditions for construction above subgrade.
B. Protect subgrade from excessive wheel loading during construction, including concrete trucks, dump trucks, and other construction equipment.
C. Remove areas of finished subgrade found to have insufficient compaction density to depth necessary and replace in area that will comply with compaction requirements by use of material imported from off-site.
D. Surface of subgrade after compaction shall be hard, uniform, smooth, stable, and true to grade and free from ruts and depressions.

3.05 BORROW SITES

- A. Upon completion of borrow operations, clean up borrow areas as indicated on Construction Drawings in neat and reasonable manner to satisfaction of property owner, Owner, and CEC.
B. Fines and grading.
C. Grade areas where finished grade elevations or contours are indicated on Construction Drawings, other than paved areas and buildings, including excavated areas, filled and transition areas, and landscaped areas. Graded areas shall be uniform and smooth, free from rock, debris, or irregular surface changes.
D. Owner has authority to limit surface area of erodible earth material exposed by clearing and grubbing, excavation, borrow, and embankment operations and to direct Contractor to provide immediate permanent or temporary pollution control measures. Contractor will be required to incorporate permanent erosion control features into project at earliest practical time to minimize need for temporary controls. Cut slopes shall be permanently seeded and mulched as required by construction activities.
E. Temporary erosion control systems installed by Contractor shall be maintained as directed by Owner to control siltation during life of contract. Contractor must respond to maintenance or additional work ordered by Owner within 48 hours.
F. Additional material and work required and authorized by Owner which is beyond extent of Construction Drawings and Storm Water Pollution Prevention Plan shall be paid for by Owner.
G. Slopes that erode easily shall be temporary seeded as work progresses with wheat, ry, or oats application in accordance with Section 02300.

END OF SECTION 02200

SECTION 02227 AGGREGATE MATERIALS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Aggregate materials for use as specified in Other Sections.

1.02 RELATED SECTIONS

- A. Section 02050 - Demolition
B. Section 02100 - Site Preparation
C. Section 02245 - Soil Stabilization
D. Section 02270 - Slope Protection and Erosion Control
E. Construction Drawings

1.03 REFERENCE STANDARDS

- A. American Society for Testing and Materials (ASTM) latest edition
D 698 Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lb/ff/3 (600 kN/m/m³))
D 998 Density and Unit Weight of Soil in Place by the Sand-Cone Method
D 1557 Laboratory Compaction Characteristics of Soil Using Modified Effort (68,000 ft-lb/ff/3 (2,700 kN/m/m³))
D 1587 Density and Unit Weight of Soil in Place by the Rubber Balloon Method
D 2216 Laboratory Determination of Water (Moisture) Content of Soil, Rock, and Soil-Aggregate Mixtures
D 2487 Classification of Soils for Engineering Purposes
D 2922 Density of Soil on Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)
D 3017 Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth)
D 3018 Liquid Limit, Plasticity Index, and Plasticity Index of Soils
D 4218 Laboratory Determination of Water (Moisture) Content of Soil, Rock, and Soil-Aggregate Mixtures
D 4247 Classification of Soils for Engineering Purposes
D 4922 Density of Soil on Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)
D 5007 Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth)
D 5101 Liquid Limit, Plasticity Index, and Plasticity Index of Soils
D 5102 Nuclear Method - Asphaltic Concrete Paving
D 5103 Nuclear Method - Portland Cement Concrete Paving
D 5104 Nuclear Method - Portland Cement Concrete Paving
D 5105 Nuclear Method - Portland Cement Concrete Paving
D 5106 Nuclear Method - Portland Cement Concrete Paving
D 5107 Nuclear Method - Portland Cement Concrete Paving
D 5108 Nuclear Method - Portland Cement Concrete Paving
D 5109 Nuclear Method - Portland Cement Concrete Paving
D 5110 Nuclear Method - Portland Cement Concrete Paving
D 5111 Nuclear Method - Portland Cement Concrete Paving
D 5112 Nuclear Method - Portland Cement Concrete Paving
D 5113 Nuclear Method - Portland Cement Concrete Paving
D 5114 Nuclear Method - Portland Cement Concrete Paving
D 5115 Nuclear Method - Portland Cement Concrete Paving
D 5116 Nuclear Method - Portland Cement Concrete Paving
D 5117 Nuclear Method - Portland Cement Concrete Paving
D 5118 Nuclear Method - Portland Cement Concrete Paving
D 5119 Nuclear Method - Portland Cement Concrete Paving
D 5120 Nuclear Method - Portland Cement Concrete Paving

1.04 QUALITY ASSURANCE

- A. An independent testing laboratory, selected and paid by Owner, shall be retained to perform construction testing on site referred to or noted on Construction Drawings with this section to paving base course design, materials, preparation, and execution. Materials shall be as indicated on Construction Drawings and shall comply with state highway department specifications regarding source, quality, gradation, liquid limit, plasticity index, and mix proportioning.
B. Off-site materials shall be transported to project using well maintained and operating vehicles. Once on site, transporting vehicles shall stop on designated haul roads and shall at no time endanger any improvements by rutting, overloading, or pumping.
C. Remove grass, trees, plant life, stumps, and other construction debris from site to dump site that is suitable for handling such material according to state laws and regulations.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Construction and materials shall meet or exceed requirements of this section and state highway department specifications section referred to or noted on Construction Drawings with this section to paving base course design, materials, preparation, and execution. Materials shall be as indicated on Construction Drawings and shall comply with state highway department specifications regarding source, quality, gradation, liquid limit, plasticity index, and mix proportioning.
B. Off-site materials shall be transported to project using well maintained and operating vehicles. Once on site, transporting vehicles shall stop on designated haul roads and shall at no time endanger any improvements by rutting, overloading, or pumping.
C. Remove grass, trees, plant life, stumps, and other construction debris from site to dump site that is suitable for handling such material according to state laws and regulations.

PART 3 EXECUTION

3.01 PREPARATION

- A. Verify existing plant life that is to remain and clearing limits are clearly tagged, identified, and marked in such manner as to leave their existing through construction operations.
B. Tests and analysis of aggregate materials will be performed in accordance with ASTM and AASHTO procedures specified herein.
C. Conduct operations with minimum interference to public or private uses and facilities. Maintain ingress and egress at all times and clean or sweep roadways daily as required by SWPPP or governing authority. Dust control shall be provided by watering systems or equipment.
D. Protect benchmarks, property corners, and other survey monuments from damage or displacement. If marker needs to be removed it shall be referenced by licensed land surveyor and replaced, as necessary, by some.
E. Provide traffic control as required, in accordance with the U.S. Department of Transportation's Manual on Uniform Traffic Control Devices and applicable state highway department requirements.

3.02 CLEARING

- A. Clear areas and provide access to site and execution of work.
B. Unless otherwise indicated on Construction Drawings, remove trees, shrubs, grass, other vegetation, improvements, or obstructions from site. Clearing shall include stumps and roots. Depressions caused by clearing and grubbing operations are to be filled to subgrade elevation to avoid ponding water. Satisfactory proof shall be furnished in accordance with Section 02200.
C. Remove grass, trees, plant life, stumps, and other construction debris from site to dump site that is suitable for handling such material according to state laws and regulations.

3.04 TOPSOIL EXCAVATION

- A. Topsoil shall consist of organic surface soil found in depth of not less than 8-inches. Satisfactory topsoil is reasonably free of subsoil, clay lumps, stones, and other objects over 2-in. diameter, weeds, roots, and other objectionable material.
B. Cut away grass.
C. Site topsoil from areas that are to be filled, excavated, landscaped, or re-graded to such depth that it retains permeability with underlying strata or questionable material.

3.02 BORROW SITES

After completion of borrow operations, clean up borrow areas as indicated on Construction Drawings in neat and reasonable manner to satisfaction of property owner and Owner.

END OF SECTION 02227

SECTION 02245 SOIL STABILIZATION

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Excavation, treatment, and backfilling of subgrade for lime stabilization.
B. Excavation, treatment, and backfilling of subgrade for cement stabilization.
C. Excavation, treatment, and backfilling of subgrade for fly ash stabilization.
D. Installation of Geotextile Fabric for stabilization of subgrade.
E. Scouring, compacting, drying, and removal of unsuitable material to ensure proper preparation of areas for fills or proposed improvements.

1.02 RELATED SECTIONS

- A. Section 02200 - Earthwork
B. Section 02227 - Aggregate Materials
C. Section 02245 - Soil Stabilization
D. Section 02270 - Slope Protection and Erosion Control
E. Section 02300 - Landscaping
F. Storm Water Pollution Prevention Plan
G. Architectural Plans and Specifications as they relate specifically to earthwork beneath buildings, where architectural requirements are more stringent than civil requirements
H. Construction Drawings

1.03 REFERENCE STANDARDS

- A. American Society for Testing and Materials (ASTM) latest edition
D 698 Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lb/ff/3 (600 kN/m/m³))
D 998 Density and Unit Weight of Soil in Place by the Sand-Cone Method
D 1557 Laboratory Compaction Characteristics of Soil Using Modified Effort (68,000 ft-lb/ff/3 (2,700 kN/m/m³))
D 1587 Density and Unit Weight of Soil in Place by the Rubber Balloon Method
D 2216 Laboratory Determination of Water (Moisture) Content of Soil, Rock, and Soil-Aggregate Mixtures
D 2487 Classification of Soils for Engineering Purposes
D 2922 Density of Soil on Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)
D 3017 Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth)
D 3018 Liquid Limit, Plasticity Index, and Plasticity Index of Soils
D 4218 Laboratory Determination of Water (Moisture) Content of Soil, Rock, and Soil-Aggregate Mixtures
D 4247 Classification of Soils for Engineering Purposes
D 4922 Density of Soil on Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)
D 5007 Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth)
D 5101 Liquid Limit, Plasticity Index, and Plasticity Index of Soils
D 5102 Nuclear Method - Asphaltic Concrete Paving
D 5103 Nuclear Method - Portland Cement Concrete Paving
D 5104 Nuclear Method - Portland Cement Concrete Paving
D 5105 Nuclear Method - Portland Cement Concrete Paving
D 5106 Nuclear Method - Portland Cement Concrete Paving
D 5107 Nuclear Method - Portland Cement Concrete Paving
D 5108 Nuclear Method - Portland Cement Concrete Paving
D 5109 Nuclear Method - Portland Cement Concrete Paving
D 5110 Nuclear Method - Portland Cement Concrete Paving
D 5111 Nuclear Method - Portland Cement Concrete Paving
D 5112 Nuclear Method - Portland Cement Concrete Paving
D 5113 Nuclear Method - Portland Cement Concrete Paving
D 5114 Nuclear Method - Portland Cement Concrete Paving
D 5115 Nuclear Method - Portland Cement Concrete Paving
D 5116 Nuclear Method - Portland Cement Concrete Paving
D 5117 Nuclear Method - Portland Cement Concrete Paving
D 5118 Nuclear Method - Portland Cement Concrete Paving
D 5119 Nuclear Method - Portland Cement Concrete Paving
D 5120 Nuclear Method - Portland Cement Concrete Paving

1.04 QUALITY ASSURANCE

- A. An independent testing laboratory, selected and paid by Owner, shall be retained to perform construction testing on site based on recommendations in the Geotechnical Investigation Report.
B. If inspection requirements are not completed at any time during construction process, remove and recompact impacted areas until proper compaction is obtained on an additional expense to Owner.
C. In areas to receive pavement, California Bearing Ratio (CBR) test shall be performed for each type of material that is imported from off-site.
D. Following tests shall be performed as part of construction testing requirements on each type of on-site or imported soil material used as compacted fill.
1. Moisture and Density Relationship: ASTM D 698 (or ASTM D 1557)
2